

# **Rotating and Reversing Mechanism for LCD Display**

## **Field of the Invention**

This invention concerns a rotating and reversing mechanism of an LCD display in particular combining with the CD player, permitting the LCD display to stand upright and rotate at an adequate angle for the audience to watch or reverse the LCD display 180° overlapped on the back of the CD player to become one unit used at the status of hang.

## **Background of the Invention**

Up to now, most well-known CD players ( for DVD and VCD) are provided, including palm and desk type, in which the CD player is outfitted with an LCD display which can be opened at 180°, but in most cases, it stands upright and the contents of the CD is displayed on the LCD display. The advantage is its compact design for easy to carry with. The desk-type CD player is linked to a TV set or a PC, and the CD is displayed on the TV set or the PC screen.

Neither of these CD players is convenient for the operator to rotate at any angle in the teaching and briefing where repeated rotation of the CD player or the LCD display is necessary. Even the palm type CD player, easy for the operator to rotate, but the teaching or briefing is frequently interrupted. Even though the external media such as TV sets, PC sets, they are bulky and heavy, not so easy to rotate in the teaching or briefing, and part of audience will lose the view of the CD contents.

In recent years, the RVs become popular. Some drivers fix the display of the CD player at a specific location, for his family to enjoy a static activity in the RV. This is not like the outdoor movie observation, because the LCD display and the CD player are fixed in a place and the LCD display is stationary with limited rotation, good for the front seat passengers to watch, but poor for the back seat passengers. There is room for improvement.

From the above statement, it is learned that the CD player is not a perfect design, requiring further improvement. The inventor has worked hard in the

design of such associated products and been devoted with great effort to the improvement and finally come up with such rotating and reversing mechanism for the LCD display.

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### **Summary of the Invention**

The major goal of the invention is to provide a rotating and reversing mechanism exclusively for the LCD display, which will combine with the CD player (for DVD and VCD). In application, they are placed on the table to turn up the LCD display displaying the contents of CD, at the case of necessary  
10 rotation of the LCD display convenient for the audience to watch, or to turn both the LCD display and the CD player to be hung on the wall for more great number of audience to watch.

To attain the above goal, this invention has designed a specific join post to link  
15 together the LCD display and the CD player. The LCD display contains the LCD display, the audio outlet, and the control buttons. The CD player comprises an upper casing and a lower casing, the CD reader, necessary circuits; the upper casing has a slot for inserting and retrieving the CD, a plurality of user-friendly control buttons. In particular, the lower end of the joint post is  
20 inserted into the joint hole on one side of the upper and lower casings and locked with the screw, permitting any rotation at a limited angle. The upper end of the joint post fits into a semi-circle concave notch on one side of the LCD display and locked in place with a pin, permitting a 360° rotation.

25 In a practical application, the CD player is placed on the table, the operator opens the LCD display from the CD player and rotates the LCD display to achieve a good presentation, or opens both the LCD display and the CD player, then turns the LCD display at 180 ° and overlaps to the back of the CD player which can be hung on the wall for teaching, briefing, and movie watching by a  
30 great number of audience.

The good features, goals, and characteristics of this invention are explained in great detail with the aid of embodiments as illustrated in the drawing.

## **Brief Description of the Drawings**

Fig. 1 shows a disassembly view of a preferred embodiment of this invention.

Fig. 2 shows an assembly view of a preferred embodiment of this invention.

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Fig. 3 shows a schematic diagram of an action the mechanism performs.

Fig. 4 is a bottom view of a preferred embodiment of this invention

10 Fig. 5 shows an application status of a preferred embodiment of this invention.

Fig. 6 shows a hanging frame which works with a preferred embodiment of this invention.

15 Fig. 7 shows an assembly view of the hanging frame together with a preferred embodiment of this invention

Fig. 8 shows a partial circuit diagram used in this invention.

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## **Detailed Description of the Invention**

Figs 1 and 2 show the rotating and reversing mechanism for the LCD display comprising at least an LCD display 1 and a CD player 2, in which

25 The LCD display 1 contains an LCD display 10, an audio outlet 11, and control buttons 12. The display 10 displays the contents of the CD, the audio outlet 11 produces the audio effect, and the control buttons 12 control the brightness, color, and contrast of screen. The display can be reversed at 180°.

30 The CD player 2 contains the upper and lower casings 20, 21, including a CD reader and necessary circuits (not shown). The upper casing 20 provides a CD slot 22 which links to the CD reader and an operation area 23 with control buttons 24.

35 The main characteristics of this invention are the specially designed center hollow joint post 3 which links the LCD display 1 and the CD player 2. The

hollow of the joint post 3 allows the passage of cable. The lower end of the joint post 3 will enter into the connecting holes 201 and 211 on the upper casing 20 and the lower casing 21 and lock therein, permitting a rotation at a limited angle. The upper end of the join post 3 links with the LCD display and is locked with a pin 101, permitting a 360° reversal.

When the CD player 2 is placed on the flat table and the LCD display 1 stands up, the operator can turn the LCD display 1 to any angle as he/she desires as shown in Fig. 3 and processes his/her teaching, briefing, or movie play. In the RV, the CD player 2 can be fixed in one place, and the LCD display can be turned at a direction as convenient and comfortable for back seat passengers to watch.

As shown in Fig. 4, there are several hanging holes 212 punched on a corner of the lower casing 21 that can go with a hanging frame 4 to offer another form of application. As shown in Fig. 6, the hanging frame 4 is a panel in a size similar to that of the CD player 2, and there several hooks 40 are corresponding to the position of the hanging holes 212. There are also several posts for fastening the CD player on the hanging frame 40 with bolt or double-faced adhesive foam tape. Both the LCD display 1 and the CD player 2 are turned on, and at 180° the LCD display 1 is reversed to overlap on the back of the CD player 2, and they are hung on the hanging frame 40 as shown in Fig. 5 by inserting the hooks 40 on the hanging frame 4 into the hanging holes 212 on the casing 21 as shown in Fig. 7. By adjusting the control button 12 on the LCD display, it works as the movie screen for a great number of audiences.

The 180° reversal of the LCD display 1 is accomplished by the adjusting button 12 and the IC circuit, and the transistor circuit as shown in Fig. 8. The control button 12 can shift the signal left to right or up and down and cause the main IC on the screen 10 to change the signal scanning sequence and reserve the image to achieve this 180° reversal.

This invention is also applicable to the palm type LCD display to achieve the tiny, compact, portable display. The dexterous design and the special post structure of this invention provide rotation and reversal of the LCD display and the CD player enhances the multi-purpose applications, convenient and practicable.

The rotation and reversal mechanism combined with the LCD display and the CD player as provided in this invention is a novel structure, practicable and never occurs in the market, justified for grant of new patent.

- 5 Many changes and modifications in the above disclosed embodiment of the invention can, of course, be carried out without departing from the scope thereof. Accordingly, to promote the progress in science and the useful arts, the invention is disclosed and is intended to be limited only by the scope of the appended claims.

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